Even though the high-cost hospitals would have much smaller losses under the outlier policy, hospitals in general would be much closer to immediate PPS than the 10-year blend (see Table 3). The principal losers under outlier policies compared with blending would be those hospitals with moderate losses in the early years under immediate PPS--losses that were not large enough to meet the requirement for outlier payments.

Grandfathering

The transition device that would exempt all old capital from the PPS would be the most highly variable of all transition policies in its effects. Hospitals that are similar in many ways could receive quite different levels of payment depending on when their investments occurred.

Hospitals with major increases in costs of capital in place before September 30, 1988, would do much better under grandfathering than those with subsequent increases in capital costs. For example, Hospital 4 would lose 15 percent--as measured by discounted present value shown in Figure 7--compared with cost-based reimbursement, while the otherwise similar Hospital 5 would lose about 72 percent. Similarly, Hospital 2 would lose more than 5 percent compared with cost-based reimbursement, while the otherwise similar Hospital 3 would gain almost 14 percent.

Grandfathering would help hospitals with high costs from projects completed before the cutoff date. High-cost hospitals with major projects completed after the cutoff date and low-cost hospitals with major projects completed before the cutoff date would do worse under grandfathering compared with the 10-year blend or the outlier policy. The high-cost hospitals that are not grandfathered do worse because the PPS payment would be much lower than actual costs; the low-cost ones that are grandfathered do worse because their actual costs would be lower than the PPS amount.

The experience of Hospital 1--which would get considerably more under grandfathering than under cost-based reimbursement--appears to contradict the conclusion. But the hospital has no fixed costs. Since movable equipment rapidly decays, the ratio of new capital to total

capital rises rapidly along with the capital payments. By the third year, Hospital 1 would be receiving 65 percent of the full PPS rate.

APPENDIX

MEDICARE'S PROSPECTIVE PAYMENT SYSTEM

Medicare's prospective payment system (PPS) removed cost-based reimbursement for about 85 percent of participating hospitals and replaced it with a fixed payment that varies depending on the type of case. In practice, predetermined rates are calculated for 473 diagnosis related groups (DRGs). These rates are calculated separately for urban and rural hospitals. They are then adjusted for differences in wage levels in various geographic areas, indirect costs of patient care associated with hospitals that have teaching programs, and costs related to treating a disproportionately large share of low-income patients. Finally, additional payments are made for cases that involve extremely long hospital stays or that are extremely expensive.

DESCRIPTION OF THE PPS

Payments to PPS hospitals are made at a predetermined rate per Medicare discharge for each of 473 DRGs. (Although discharges are classified into 475 different DRGs, only 473 have payment rates associated with them, since DRG numbers 469 and 470 represent cases that could not be easily grouped into appropriate DRG categories.) During the first four years under the system, the DRG rates were based on a combination of each hospital's actual costs in a previous period, regional rates, and national rates. For accounting periods beginning in fiscal year 1988, payments will be based only on national rates for most hospitals. Exceptions are for urban hospitals in two Census divisions, New England and East North Central, and rural hospitals in four divisions--the same two as for urban hospitals, plus the Middle Atlantic and South Atlantic divisions. In these areas, hospitals' payments will be based on a blend of 85 percent national rates and 15 percent regional rates.

The PPS is designed to cover all inpatient operating costs, which include the costs of routine, ancillary, and special care services. On the other hand, payments for capital and direct medical education costs, as well as for bad debt attributable to Medicare patients, are still determined on a retrospective cost basis.

The PPS payments to hospitals are based on four major components: standardized amounts, DRG weights, adjustments for explainable and unavoidable differences in costs, and outlier payments.

Standardized Amounts

The standardized amounts are the system's base prices per Medicare discharge. They are calculated as an average of hospitals' costs per Medicare case in 1981 that have been updated to the current period and "standardized." The regional and national rates for fiscal year 1984 were based on 1981 costs per discharge that were projected based on actual and estimated national increases in hospitals' inpatient operating costs per discharge through fiscal year 1983. The two rates were projected through fiscal year 1984 by a legislated factor equal to the increase in the cost of hospitals' inputs--often called their "market basket"--plus one percentage point. The update factor for the second year under PPS equaled the increase in the market basket plus a discretionary adjustment factor (DAF), legislated to be 0.25 percentage point. The latter process is designed to control for the effects of what are considered explainable and unavoidable differences in costs among hospitals. Sources of differences include the mix of cases among DRGs, local wage levels, indirect costs of patient care associated with teaching programs, and costs attributable to serving a disproportionately large share of low-income patients. Hence, payments per discharge differ among hospitals because of the adjustments for these unavoidable cost differences.

The standardized amounts have been calculated separately for urban and rural areas, and separately based on two types of historical costs--labor and nonlabor components--with the former accounting for about 75 percent of the total. The national standardized amounts for 1987 were as follows:

	Labor	Nonlabor	Total
Urban	$2,159	$812	$2,970
Rural	1,890	560	2,450

Thus, before accounting for differences in case mix and other factors, an urban hospital received about $500 more for each discharge than a rural hospital. Beginning in fiscal year 1988, the standardized amounts are based on discharge--rather than hospital--weighted costs. If that basis had been used in fiscal year 1987, the difference between urban and rural standardized amounts would have been reduced from $500 to $425.

DRG Weights

A key component of the PPS rates is a set of weights that reflect the relative resource intensity, or costliness, of providing care to Medicare patients in each of the 473 DRGs. A hospital's standardized amount is multiplied by the appropriate DRG weight to get the payment applicable to a specific admission. For example, DRG 103--the heart transplant--has a weight of 11.9225. An urban hospital would receive more than $35,000 for this complicated procedure (before other adjustments described below) compared with the urban standardized amount of $2,970. In this way, hospitals receive payments for each patient discharge that reflect, on average, the costs of that specific type of case, as well as the factors that influence their particular standardized amounts.

Adjustments

These amounts--that is, the hospital's standardized amount multiplied by the DRG's weight--are then adjusted to account for a variety of factors:

- *Local Wage Differences.* The payments are adjusted by applying a wage index for the area in which the hospital is located. The index measures the average wages paid by hospitals in that locality compared with the national average of

hospitals' wages. The geographic areas used for the wage index are defined as Metropolitan Statistical Areas (MSAs) for urban hospitals, and all non-MSA areas within a state for rural hospitals. In all, a wage index is calculated for 364 areas--316 MSAs and 48 rural areas (Rhode Island and New Jersey do not contain any areas outside of MSAs). The wage index is only applied to the labor portion of the standardized amount.

- *Indirect Teaching Adjustment.* Hospitals with approved medical education programs receive additions to their payment amounts based on the ratio of number of residents to number of beds. Specifically, rates are increased by about 8 percent for each 10 percent increase in the ratio.

- *Disproportionate Share Adjustment.* Hospitals with a disproportionately large share of low-income patients receive additions to their payment amounts based on an index equal to the sum of the proportion of all patients that are Medicaid recipients and the proportion of Medicare patients that receive Supplemental Security Income (SSI).

Payments for "Outliers"

Payments under the PPS are based on average amounts. As a result, the payment for a specific discharge is only rarely identical to the costs incurred for that case. Ordinarily, an individual hospital bears the risk: it keeps the excess or makes up the shortfall. Certain cases, however, may involve extraordinarily long hospital stays or very high costs relative to the average for the appropriate DRG. For these cases--referred to as "outliers"--the PPS has special payments.

Medicare pays for two types of outliers: "day" outliers and "cost" outliers. Day outliers are those cases with much-longer-than-typical stays for the specific DRG. Cost outliers are cases with extremely high costs relative to the specific DRG's payments. The thresholds that determine which cases are outliers--that is, the length of stay or cost values--are set so that outlier payments account for approximately 5 percent to 6 percent of total PPS payments. The urban and rural

standardized amounts are reduced by the appropriate percentage so that outlier payments are, in effect, budget neutral for these two types of hospitals. The fiscal year 1987 urban and rural standardized amounts were reduced by 5.4 percent and 2.2 percent, respectively, to account for estimated outlier payments.[1]

CALCULATION OF A PPS PAYMENT FOR A HYPOTHETICAL HOSPITAL

Table A-1 shows how the prospective payment would be computed for a specific admission--in this example, a fracture of the femur--to a hypothetical urban hospital. The first panel states that the illustrative discharge is for a fracture of the femur with a DRG weight of 1.4137. The second panel shows that this hypothetical hospital has 300 beds, 30 interns and residents, and a rather high index of low-income patients (0.40). Its wage index of 1.226 indicates that it is located in an area with higher-than-average wages. The next panel shows that the 1987 standardized amounts for an urban hospital were $2,159 for labor and $812 for nonlabor. The final panel shows how to calculate the prospective payment for a fracture of the femur at this hypothetical hospital.

The total PPS payment of $6,009 for this discharge is calculated in five steps:

- The standardized amount for labor ($2,159) is multiplied by the area wage index of 1.226, yielding an adjusted labor amount of $2,647;
- The adjusted labor amount ($2,647) is added to the nonlabor amount ($812), yielding a payment, adjusted for the wage index, of $3,459;
- The amount for the specific diagnosis--fracture of the femur--is calculated as the product of the DRG weight (1.4137) times

1. For a more complete discussion of the Medicare PPS, see Joseph A. Cislowski and Janet Pernice Lundy, *Medicare: Prospective Payments for Inpatient Hospital Services* (Washington, D.C.: Congressional Research Service, 1987).

TABLE A-1. CALCULATION OF THE PPS PAYMENT FOR A HYPOTHETICAL HOSPITAL IN CHICAGO, ILLINOIS

Hypothetical Case	
DRG 235 (Fracture of the femur)	
Discharged on August 18, 1987	
PPS Weight	1.4137
Hypothetical Hospital's Characteristics	
Number of Beds	300
Number of Interns and Residents	30
Index of SSI and Medicaid Patients	0.40
Area Wage Index	1.226
1987 PPS Standardized Amounts (In dollars)	
Labor (Unadjusted)	2,159
Nonlabor (Unadjusted)	812
Calculation of PPS Payment (In dollars)	
Labor (Unadjusted)	2,159
Area Wage Adjustment (1.226 x 2,159)	488
Labor (Adjusted)	2,647
Nonlabor (Unadjusted)	812
Total Labor and Nonlabor	3,459
Payment for DRG 235	
DRG 235 (1.4137 x $3,459)	4,890
Adjustments	
Indirect teaching (0.079 x 4,890)	385
Disproportionate share (0.150 x 4,890)	734
	6,009

SOURCE: Congressional Budget Office calculations of a hypothetical hospital's payment for one DRG under the PPS.

the payment adjusted for the wage index ($3,459), resulting in a payment before other adjustments of $4,890;

- This hospital's resident-to-bed ratio would entitle it to an adjustment of about 8 percent, or $385, for indirect teaching costs; and
- Finally, the hospital would receive 15 percent more, or $734, because it serves a large share of low-income patients--its index of Medicaid and SSI patients is 0.40.

The resulting total PPS payment is $6,009, about twice the sum of the standardized amounts for labor and nonlabor.

COMPARING PPS PAYMENTS AMONG HOSPITALS

Although calculating the payment for a specific discharge helps illustrate how PPS works, it does not provide any information on the range of payments under PPS. For that, payments under PPS were computed for different categories of hospitals and then adjusted for differences in case mix.

Table A-2 shows, for various categories of hospitals, the average payment per discharge for fiscal year 1988 (the first column of numbers) and the distribution of payments per discharge (the next five columns of numbers). For example, the average cost per discharge for all hospitals is $3,493. Five percent of all hospitals, however, receive $2,254, or less, while another 5 percent receive $4,699 or more (see the first row in Table A-2), even after adjusting for differences in case mix.

Payments under PPS are systematically related to certain hospitals' characteristics. Major teaching hospitals, for example, receive two-thirds higher payments per discharge compared with nonteaching hospitals (see Table A-2). In fact, the top 5 percent of major teaching hospitals receive about three times as much per discharge as the bottom 5 percent of nonteaching hospitals. Other systematic relation-

TABLE A-2. DISTRIBUTION OF ADJUSTED PAYMENTS UNDER PPS BY CATEGORY OF HOSPITAL (In dollars for fiscal year 1988)

Hospital Type	Average Cost per Discharge[a]	Percentiles				
		5th	25th	50th	75th	95th
All Hospitals	3,493	2,254	2,451	3,020	3,589	4,699
Urban	3,806	2,937	3,245	3,549	3,988	5,120
Rural Referral Centers	2,931	2,592	2,727	2,853	3,001	3,342
Other Rural	2,466	2,217	2,335	2,435	2,536	2,917
Major Teaching	5,240	3,871	4,675	5,132	5,941	6,676
Minor Teaching	3,836	2,860	3,426	3,752	4,133	5,128
Nonteaching	3,126	2,243	2,414	2,702	3,334	4,083
East North Central	3,567	2,467	2,541	3,211	3,700	4,628
East South Central	2,886	2,190	2,256	2,335	3,030	3,685
Mid-Atlantic	4,169	2,595	3,123	3,621	4,382	6,139
Mountain	3,300	2,067	2,522	2,647	3,333	3,976
New England	3,781	2,466	3,090	3,523	3,910	4,740
Pacific	4,113	2,754	3,363	3,869	4,246	5,349
South Atlantic	3,161	2,255	2,376	2,948	3,276	4,043
West North Central	3,113	2,332	2,386	2,448	2,919	3,757
West South Central	3,076	2,231	2,343	2,591	3,291	3,815
Church	3,540	2,314	2,613	3,271	3,783	4,705
Government	3,216	2,231	2,355	2,487	3,062	4,768
Other Nonprofit	3,612	2,313	2,523	3,190	3,706	4,772
Proprietary	3,319	2,251	2,528	3,205	3,706	4,359
Small MSA (pop. less than 250,000)	3,275	2,751	3,014	3,164	3,395	3,964
Medium MSA (pop. 250,000-1,000,000)	3,553	2,948	3,199	3,407	3,732	4,389
Large MSA (pop. 1,000,000+)						
Central	4,458	3,213	3,685	4,144	4,837	6,253
Suburban	3,896	3,114	3,464	3,739	4,107	4,912
Rural	2,544	2,219	2,340	2,446	2,576	3,016

SOURCE: Congressional Budget Office simulations based on Medicare cost report files.

NOTES: Hospital payments were adjusted by the case mix index--that is, the average DRG weight--for each hospital.
MSA = Metropolitan Statistical Area.

a. Weighted by discharge. The unweighted average for all hospitals would be $3,139 per discharge.

ships are also apparent: urban hospitals receive higher payments compared with rural hospitals; those in large cities receive more than those in small ones.

Interpreting these differences between hospitals is not straightforward. In theory, the difference in payment between a major teaching and a nonteaching hospital in the same city for the same type of case might be as little as 19 percent. The major teaching hospital, however, is more likely to be in a high-cost, large city compared with the nonteaching hospital, which is more likely to be in a low-cost, rural setting. The large variation in payments per discharge is the result of interaction between the many adjustments under PPS.

GLOSSARY

These definitions were compiled from numerous sources. See the list at the end of the glossary.

Apportionment. See cost apportionment.

Allowable Costs. Elements of cost that are reimbursable, usually under a third-party reimbursement formula. For example, allowable costs under Medicare exclude the costs of such things as new telephones or anti-unionization efforts.

Ancillary Services. Hospital inpatient services other than room and board, and professional services. They may include X-ray, drug, laboratory, or other services not separately itemized, but the specific content is quite variable.

Bad Debt. An uncollectible debt arising from services rendered.

Blending. A transitional prospective payment method that bases a hospital's payment on the average of a federal PPS amount and a hospital-specific amount.

Buildings. The basic hospital structure, or shell, and additions thereto.

Case Mix. The relative frequency of admissions of various types of patients, reflecting different needs for hospital resources. There are many ways of measuring case mix, some based on patients' diagnoses or the severity of their illnesses, some on the use of services, and some on the characteristics of the hospital or area in which it is located.

Capital. A factor of production that consists of produced goods that are used for further production. More specifically, an asset with a life

Capital Costs. Costs associated with the use of capital facilities and equipment, including depreciation and interest expenses.

Capital Cycle. Capital costs are higher for those hospitals with new or newly renovated facilities than for those with older physical plants.

Cost Apportionment. The process of distributing all costs between Medicare and other payers.

Cost-based Reimbursement. Under this arrangement, a third-party payer pays the hospital for the care received by covered patients at cost, not on the charges actually made for those services.

Depreciation. A method of accounting that distributes the cost or other basic value of capital assets over their estimated useful life in a systematic manner. Depreciation for any year is a portion of the total cost that is allocated to that year.

Diagnosis Related Groups (DRGs). A classification system that groups patients according to principal diagnosis, presence of a surgical procedure, age, presence of other significant conditions or complications, and other relevant criteria.

Discharge. A formal release from a hospital or a skilled nursing facility. Discharges include people who died during their stay or were transferred to another facility.

Discount Rate. The interest rate used in the discounting process; sometimes called the capitalization rate.

Discounting. The process of finding the present value of a series of future cash flows.

Fixed Equipment. Sometimes called building equipment. Attachments to buildings, such as wiring, electrical fixtures, plumbing, elevators, heating system, and air conditioning system. Since the useful lives of such equipment are shorter than those of the buildings, the equipment may be separated from building cost and depreciated over this shorter useful life.

Funded Depreciation. Savings accumulated from depreciation allowances and set aside for replacement of capital. Interest earnings on these funds are not offset against interest costs.

Grandfathering. A transitional payment method that is limited to expenses for assets acquired on or after a certain date. Expenses resulting from assets acquired before that date would continue to be paid under cost-based reimbursement principles.

Historical Cost. The charge incurred at the time an item or resource was originally purchased and which is thus not equal to the replacement cost if prices rise in the meantime.

Inpatient Hospital Services. Inpatient hospital services are items and services furnished to an inpatient by the hospital, including room and board, nursing and related services, diagnostic and therapeutic services, and medical or surgical services.

Investment. The flow of expenditures devoted to increasing the real capital stock.

Movable Equipment. Equipment that has a useful life of three years or more and can be moved. This category includes beds, wheelchairs, desks, computers, vehicles, and X-ray machines.

Medicare Hospital Insurance (HI). A program providing basic protection against the costs of hospital and related post-hospital services for individuals who are age 65 or over and are eligible for retirement benefits under the Social Security or railroad retirement systems; for individuals under age 65 who have been entitled to disability benefits under the Social Security or railroad retirement systems for at least 24 months; and for certain other individuals who are medically determined to have end-stage renal disease and are covered by the Social Security or railroad retirement systems.

Medicare Supplementary Medical Insurance (SMI). A voluntary insurance program for aged and disabled individuals who elect to enroll, it provides insurance benefits for physicians' and other medical services in accordance with the provisions of Title XVIII of the Social Security Act. The program is financed by premium payments by enrollees and contributions from funds appropriated by the federal government.

Mortgage. A pledge of designated property as security for a loan.

Operating Expenses. Expenses incurred in the course of ordinary activities of a hospital.

Outlier. A transitional payment method that provides additional payments to hospitals with especially high costs per case. (Sometimes refers to case outliers under the PPS for operating costs.)

Plant. Land, land improvements, buildings, and fixed equipment.

Present Value. The value today of a future payment, or stream of payments, discounted at the appropriate discount rate.

Prospective Payment. Hospital payment programs where rates are set before the period during which they apply and where the hospital incurs at least some financial risk.

Principal. The original amount of capital invested or loaned, as distinguished from profits or interest earned.

Reasonable Cost. An amount based on the actual cost of providing services, including direct and indirect costs of providers but excluding costs unnecessary for the efficient delivery of services covered by the Medicare Hospital Insurance program.

Reimbursement. The dollar amount of medical expenses payable by the Medicare program.

Replacement Cost. See historical cost.

Retrospective Reimbursement. See cost-based reimbursement.

Return on Equity. Medicare reimbursement to a proprietary provider as a payment for equity capital.

Routine Services. Hospital inpatient room and board, and related services.

Salvage Value. Value of a capital asset at the end of a specified period. The salvage value is the current market resale price of an asset being considered for replacement.

Straight-line Depreciation. If the depreciable life is x, then the periodic depreciation charge is 1/x of the depreciable cost.

Transition Device. Any capital reimbursement policy that eventually culminates in fully prospective payment for capital costs, but which reduces the disruption to some hospitals that would ensue from immediately carrying out the prospective payment.

Useful Life. Period of expected usefulness of an asset. Sometimes called "service life."

SOURCES. Howard J. Berman, Lewis E. Weeks, and Steven F. Kukla, *The Financial Management of Hospitals*, 6th ed. (Ann Arbor: Health Administration Press, 1986).

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